We claim:

1. An endovenous method of treating a varicose vein using a laser having a wavelength between about 1.2 and about 1.8 um to heat and shrink collagen in a varicosed vessel wall in the absence of blood.

2. The method of Claim 1 in which the laser energy is delivered with a fiber optic laser delivery device.

3. The method of Claim 1 further comprising the following steps:

Inserting a fiber optic laser delivery device into the varicose vein;

Using a pullback device to retract the fiber optic laser delivery device through the varicose vein at a rate of between about 0.1 mm/sec and about 10.0 mm/sec while simultaneously delivering laser energy therefrom.

4. The method of Claim 3 in which the fiber optic laser delivery device is retracted at a rate of between about 1.0 mm/sec and about 5.0 mm/sec.

5. The method of Claim 3 in which the pullback device begins retraction of the fiber optic laser delivery device just prior to initiating delivery of the laser energy, thereby preventing the tip of the fiber optic laser delivery device from sticking to the vessel wall.

6. The method of Claim 1 in which blood is removed from the varicosed vein prior to treatment with laser energy.

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7. The method of Claim 2 in which the fiber optic laser delivery device is introduced to the varicose vein through an introducer catheter.

8. The method of Claim 2 in which the energy delivered through the fiber optic laser delivery device is evenly distributed by using a diffuse radiating tip mounted to the distal end of the fiber optic laser delivery device.

9. The method of Claim 2 in which an non-contact thermal sensor is used to maintain a desired temperature.

10. The method of Claim 9 in which the thermal sensor is used to maintain a desired coagulation temperature.

11. The method of Claim 9 in which the thermal sensor is used to maintain a desired collagen shrinkage temperature.

12. The method of Claim 9 further comprising the step of using the fiber optic laser delivery device as a sensing element.

13. The method of Claim 9 further comprising the step of modulating the laser power based on the sensed temperature to maintain the desired temperature.

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14. A system for endovenous treatment of varicose veins comprising the following:

A laser having a wavelength between about 1.2 and about 1.8 um;

A fiber optic laser delivery device having a proximal end and a distal end, for delivery of laser energy from the distal end of the fiber optic laser delivery device to the inside wall of a varicose vein; and

A pullback device which retracts the fiber optic laser delivery device through the varicose vein at a rate of between about 0.1 mm/sec and about 10.0 mm/sec while simultaneously delivering laser energy therefrom, wherein collagen in the varicosed vessel wall can be heated and shrunk in the absence of blood.

15. The system of Claim 14 in which the pullback device retracts the fiber optic laser delivery device through the varicose vein at a rate of between about 1.0 mm/sec and about 5.0 mm/sec.

16. The system of Claim 14 further comprising anesthesia administered to tissue surrounding the varicose vein, wherein the anesthesia causes swelling of the tissue surrounding the varicose vein which causes compression of the varicose vein in order to remove blood prior to treatment.

17. The system of Claim 14 further comprising an introducer catheter, wherein the fiber optic laser delivery device can be introduced to the varicose vein.

18. The system of Claim 17 in which the introducer catheter comprises an elongated lumen portion having a proximal end and a distal end, wherein the fiber optic laser delivery device is introduced to the introducer catheter through the proximal end and is introduced to the varicose vein through the distal end.

19. The system of Claim 18 further comprising a diffusing tip at the distal end of the introducer catheter for providing even distribution of energy radiating during treatment.

20. The system of Claim 18 further comprising a diffusing tip at the distal end of the fiber optic laser delivery device for providing even distribution of energy radiating during treatment.

21. The system of Claim 14 further comprising an non-contact thermal sensor.

22. The system of Claim 21 further comprising a controller coupled to the thermal sensor for controlling the temperature in a region near the distal end of the fiber optic laser delivery device.

23. The system of Claim 22 in which the controller modulates a power input to the laser for controlling the temperature in a region near the distal end of the fiber optic laser delivery device.

24. The system of Claim 21 wherein the fiber optic laser delivery device is also the thermal sensor.

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